

MINING UTAH'S HERITAGE

The story of mining in Utah



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About This Workbook

This workbook will tell three things about mining. Enjoy it. Share it with your family and friends.



1. Mining – How we mine and what we mine.

Mining is the way we get minerals like gold and silver from the earth. Big machines move a lot of earth to mine. Drying salt from Great Salt Lake waters and pumping oil from wells are mining also. After minerals are mined, they are cleaned, then moved to places where they are made into skateboards, jewelry, bicycles and other useful things. When miners are finished mining, they clean up the land so it can be used again. This is called **reclamation**.



2. History – Mining is part of Utah's heritage.

Mining has been important in Utah for a long time. It created jobs and towns and cities. People came from all over the world to work in mines. This kind of history is called our **heritage**.



3. Safety – Avoiding the dangers of old mines.

Thousands of old mines were not cleaned up when mining stopped. Utah closes these **abandoned** mines and cleans up the land. But some dangerous mines are still in the mountains and deserts. People get hurt exploring them. Stay away!

OPTIONAL EXTENDED LEARNING:

Did you learn some new words? What are they? What do they mean?



1.

UNIT 1. MINING

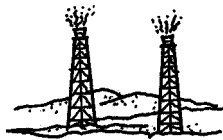
We depend on mining every day.

Mining products are all around us. Parts of your house come from a mine. So do many things in your classroom such as your desk and chalk.

GAME 1 --

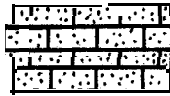
-Here is a list of things that come

from mining. They are things you need in your house and classroom. The minerals used to make them are listed also. Minerals have funny and different names. Say them out loud and then answer the questions below.



energy — coal, steam, oil (petroleum), gas, uranium

bricks — limestone, clay, shale, stone, sand, gravel



bathtubs — clay, iron, oil

shower heads — copper, zinc, iron, nickel, chromium

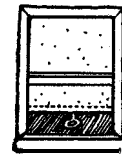


computers — gallium, germanium, gold, silica, beryllium, copper, oil



paints — clay, gilsonite

windows — trona, silica, sand, feldspar



coins — gold, silver, copper



nails and screws — iron, zinc, copper

ink — gilsonite

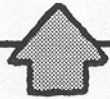


1. What minerals are already familiar to you? _____
2. List minerals that begin with the letter "G." _____
3. What mineral is funny for you to say out loud? _____
4. What mineral do you play with at the beach? _____
5. What mineral has the same **name** as a 5 cent coin? _____
6. What is another word for oil? _____

GAME 2

We mine things that we cannot grow. Decide which items in each section are mined. Mark the boxes next to them. In the spaces below, draw or paste pictures of things made from mined materials.

Construction:



Construction workers use:

- | | |
|--|------------------------------------|
| <input type="checkbox"/> concrete | <input type="checkbox"/> tools |
| <input type="checkbox"/> bricks | <input type="checkbox"/> gloves |
| <input type="checkbox"/> lunch buckets | <input type="checkbox"/> hard hats |

Music:

Farming:

Farmers use:

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> fertilizer | <input type="checkbox"/> irrigation systems |
| <input type="checkbox"/> grain | <input type="checkbox"/> tractors |

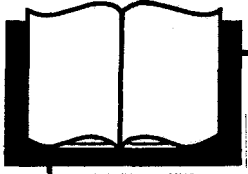
Travel:

To travel around the world and into space, we use:

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> seatbelts | <input type="checkbox"/> trucks |
| <input type="checkbox"/> trains | <input type="checkbox"/> freeze-dried food |
| <input type="checkbox"/> rocket ships | <input type="checkbox"/> cars |

To play music, we use:

- | | |
|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> drumsticks | <input type="checkbox"/> French horns |
| <input type="checkbox"/> cymbals | <input type="checkbox"/> trumpets |



Do you know the history of Utah mining?

GAME

Answer the questions after each story.

Utah's first miners.

American Indians, Mexicans and Spaniards mined before Mormon pioneers arrived in 1847. Mormons mined coal to heat their homes and lead to make bullets. They mined iron to make farm tools, pots and pans, and nails.

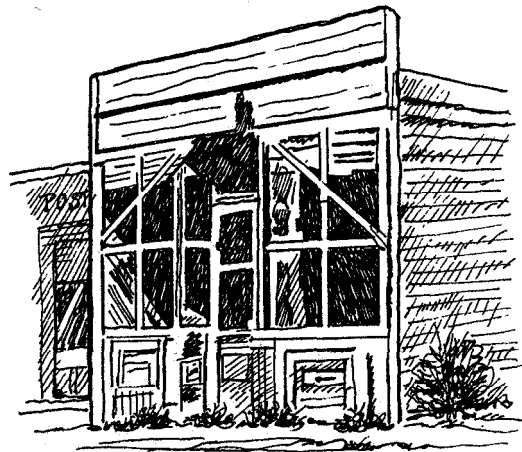
1. Mormon pioneers mined iron to make:
 - ☐ heat
 - ☐ farm tools
 - ☐ bullets

Mines sprang up all over Utah.

Utah mining grew rapidly after the railroad was finished in 1869. Rail cars carried minerals to many places to be sold. In the 1890s, coal mining became important in Carbon County. By the early 1900s, silver and copper were Utah's most important minerals. A uranium boom started in the 1950s.

As mines were discovered, towns were built around them. Many started as mining camps. Today Alta is a famous ski resort, but 100 years ago it was a mining town. Some of these towns did not last very long. They became ghost towns where no one lives anymore. You still can see old mines in Big and Little Cottonwood canyons and in the Oquirrh Mountains near Salt Lake City. There are also old mines near Park City and at Silver Reef near St. George.

2. What mining town became a ski resort?
 - ☐ St. George
 - ☐ Mercur
 - ☐ Alta



Mining created jobs for immigrants.

People came from all over the world to live in Utah. Those people are called immigrants. Some immigrants worked in the mines. Others ran grocery stores, restaurants and businesses in mining towns. Most immigrants did not speak English.

Often the immigrants lived in neighborhoods with people from their own countries. In Salt Lake City, there was a Chinatown and a Greektown. There were neighborhoods of Italians, Japanese, Armenians and other nationalities.

3. Have you ever eaten a taco? _____, a gyro? _____, sushi? _____, spaghetti? _____
What nationalities brought these foods to our country?

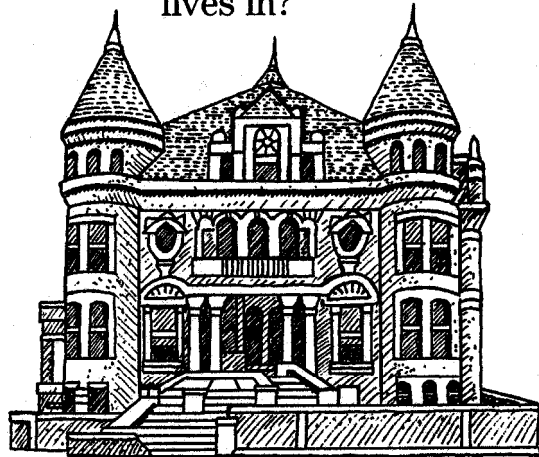
Can you name some other foods the immigrants brought? _____



Rich miners built mansions.

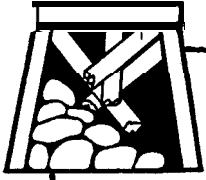
Mining made a few people rich. These people built mansions, skyscrapers and hotels. Many of the mansions on Salt Lake City's South Temple Street were built with mining money. The governor lives in the Kearns Mansion.

TO DO: Next time you are in Salt Lake City, go to South Temple Street and see the mansions. Which one do you think the governor lives in?



OPTIONAL EXTENDED LEARNING:

Ask about your **heritage**. Which states and countries did your parents, grandparents and great-grandparents come from?



Old mines are dangerous!



Color the picture.

GAME

What is the secret message in this word game? Unscramble the words below. Write one letter in each square. The letters will make seven words about old mines. You can find all the words in the story.

1. I L D E L K
 L
2. A G R E N D
 R
3. T B E R A H E
 H
4. I O O S U N P O S
 N
5. A N B D E O A N D
 B
6. U R H T
 R
7. L S O T
 S

Now find the secret message. The circled letters spell a message for you about old mines. Write the letters in the boxes below.

SECRET MESSAGE

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Do you like to go exploring? Most of us do! But exploring old mines can be dangerous. Children and adults have been **hurt** or killed at old mines.

Utah has many deserted mines. Some of these mines have not been used for many years. There is not much to see in an **abandoned** mine, but there is a lot of **danger**.

Some mines look like a cave in the side of a mountain. There are many dark tunnels in the mines. The roofs of the mines are held up by old pieces of wood. Sometimes the wood breaks and the roof falls in. If you are in a mine when this happens, you can be hurt or **killed**.

Fires are often burning in underground mines. They burn up the oxygen you need to breathe. These fires spread quickly and release deadly gases.

You can get **lost in** dark tunnels. Even miners have gotten lost while working in underground mines.

Some mines contain poisonous gases. These gases take the place of oxygen you need to **breathe**.

Snakes, spiders, scorpions, and **poisonous** insects live in old mine openings. These dangerous creatures can bite or sting you.

To be safe, **keep out** of old mines.

OPTIONAL EXTENDED LEARNING:

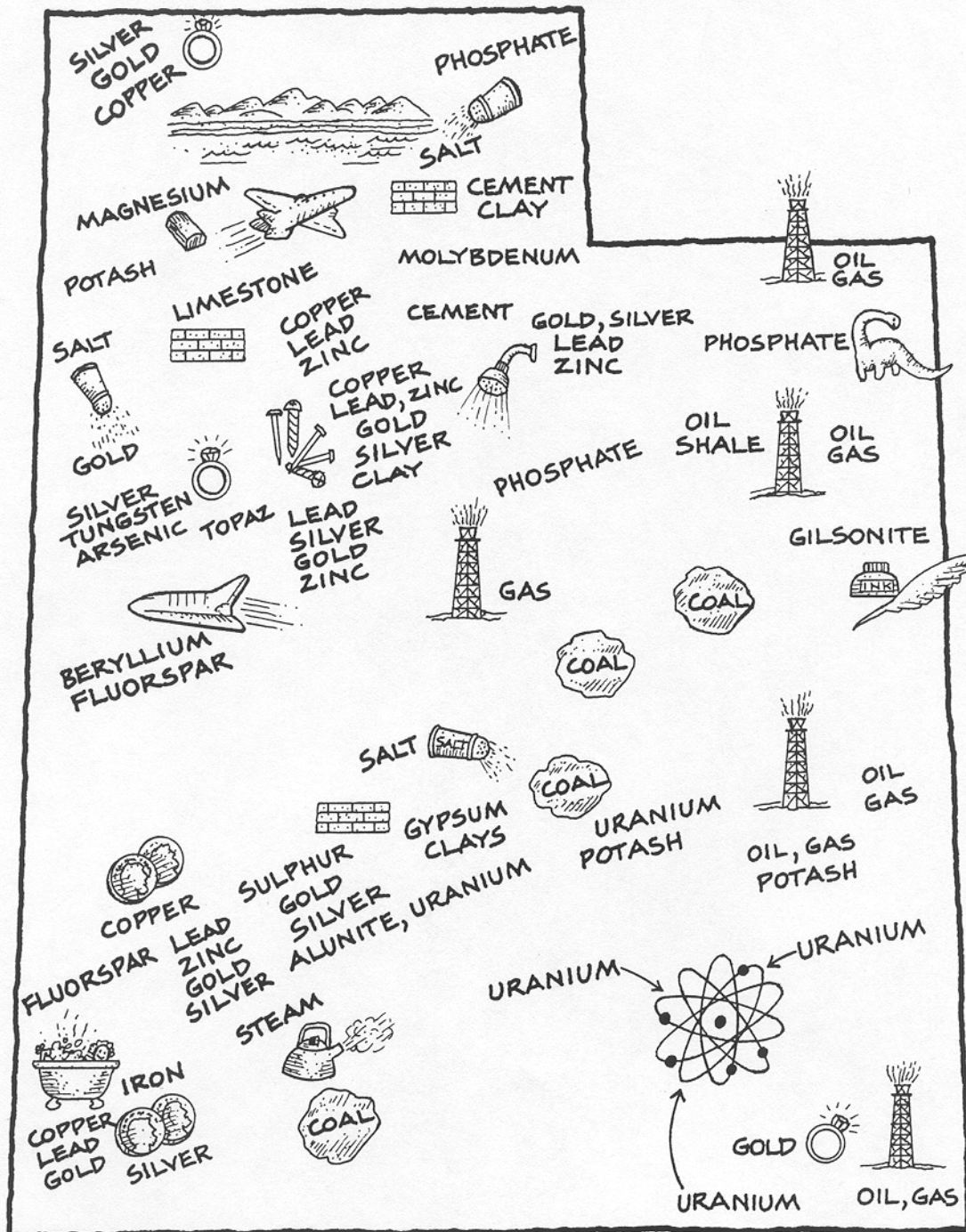
Think of some things you would do to survive if you were trapped in an old mine. Or draw some dangerous creatures which are found in **abandoned** mines.



2.

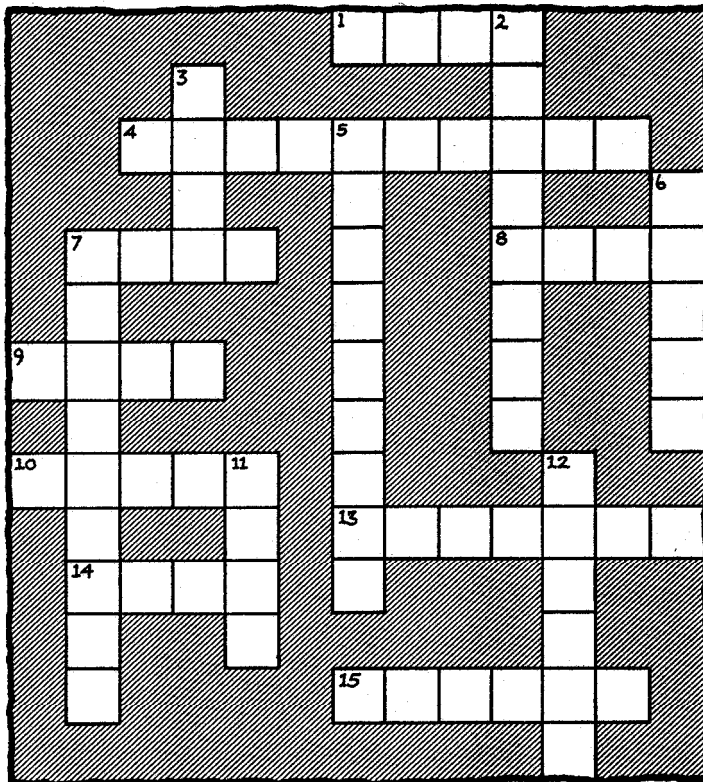
UNIT 2. MINING

Where are Utah's minerals?



The answers to this crossword puzzle are in the Word Mine. They are also on the map. Can you find them?

Solve it ORE* else! *ORE =Any material that can be mined and sold.

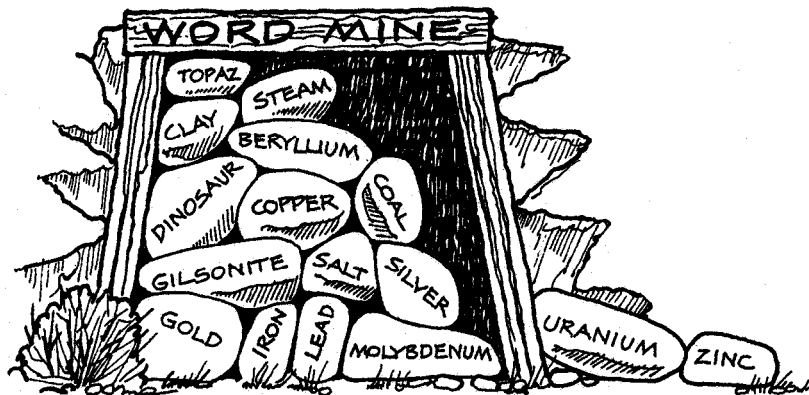


Across

1. This metal is very heavy.
4. This metal hardens steel and has a funny name.
7. Miners rushed to Utah in 1392 to mine this metal.
8. This mineral is mined from the Great Salt Lake.
9. **This mineral** is used to make bricks and ceramics.
10. This gem looks like a diamond.
13. This mineral is radioactive.
14. This mineral is the main ingredient in steel.
15. Pennies are made from this mineral.

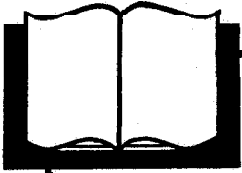
Down

2. Fossils of these are found in Utah.
3. This mineral burns and is used in power plants.
5. This rare mineral is used in the space program.
6. Geothermal water produces this gas.
7. This shiny, black mineral is used to make records and other plastics.
11. This mineral rhymes with **Sink**.
12. Park City, Alta and Eureka are famous for this metal.



OPTIONAL EXTENDED LEARNING:

There are other minerals mined in Utah: gypsum, oil shale, arsenic, potash and fluorspar. Find out what things are made from these minerals.



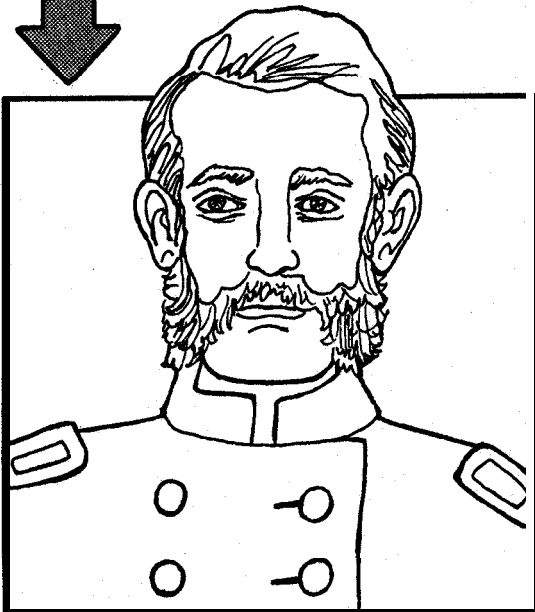
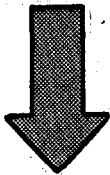
Meet some famous miners.

GAME

These people were some of the first miners in Utah. First, read about what they did. Then, match their names with their contributions.

Chief Tintic was a Ute Indian. The Tintic Mining District was named after him. He knew the value of silver in the area where he lived.

Patrick E. Connor is called the Father of Mining in Utah. He was an Army colonel who helped start Fort Douglas. He and his soldiers started many silver mines in Utah.



The **McIntyre brothers** were cattle ranchers. They traded their herd for the Mammoth Mine in the Tintic Mining District and struck it rich.

Samuel Newhouse is called the Father of Copper Mining in Utah. He found rich copper ore more valuable than gold and later built Utah's first copper smelter.

Famous miner

- | | |
|----------------------|-----------------------|
| 1. Chief Tintic | <input type="radio"/> |
| 2. Patrick E. Connor | <input type="radio"/> |
| 3. McIntyre brothers | <input type="radio"/> |
| 4. Samuel Newhouse | <input type="radio"/> |

Contribution

- Father of Mining in Utah
- First copper smelter
- Knew the value of silver
- Developed the Mammoth Mine

Susanna Egeria Bransford Emery Holmes Delitch Engalitcheff was known as Utah's Silver Queen. She became wealthy when the first of her four husbands discovered silver. She lived the lavish life-style of the rich and famous.

Thomas Kearns and **David Keith** made their fortunes at the Mayflower and Silver King mines in Park City. Both built mansions in Salt Lake City on Brigham Street, now South Temple Street. The governor of Utah now lives in the Kearns Mansion.



Famous miner

- 5. Susanna Engalitcheff ☐
- 6. Kearns & Keith ☐
- 7. Mary Judge ☐
- 8. Charles A. Steen ☐

Contribution

- a. Judge Memorial High School
- b. Silver Queen
- c. Made a fortune in uranium
- d. Brigham Street mansions

Mary Harney Judge gave much of her Park City mining fortune to private charities. One project was a hospital for sick and aging miners. The hospital is now Judge Memorial High School in Salt Lake City.

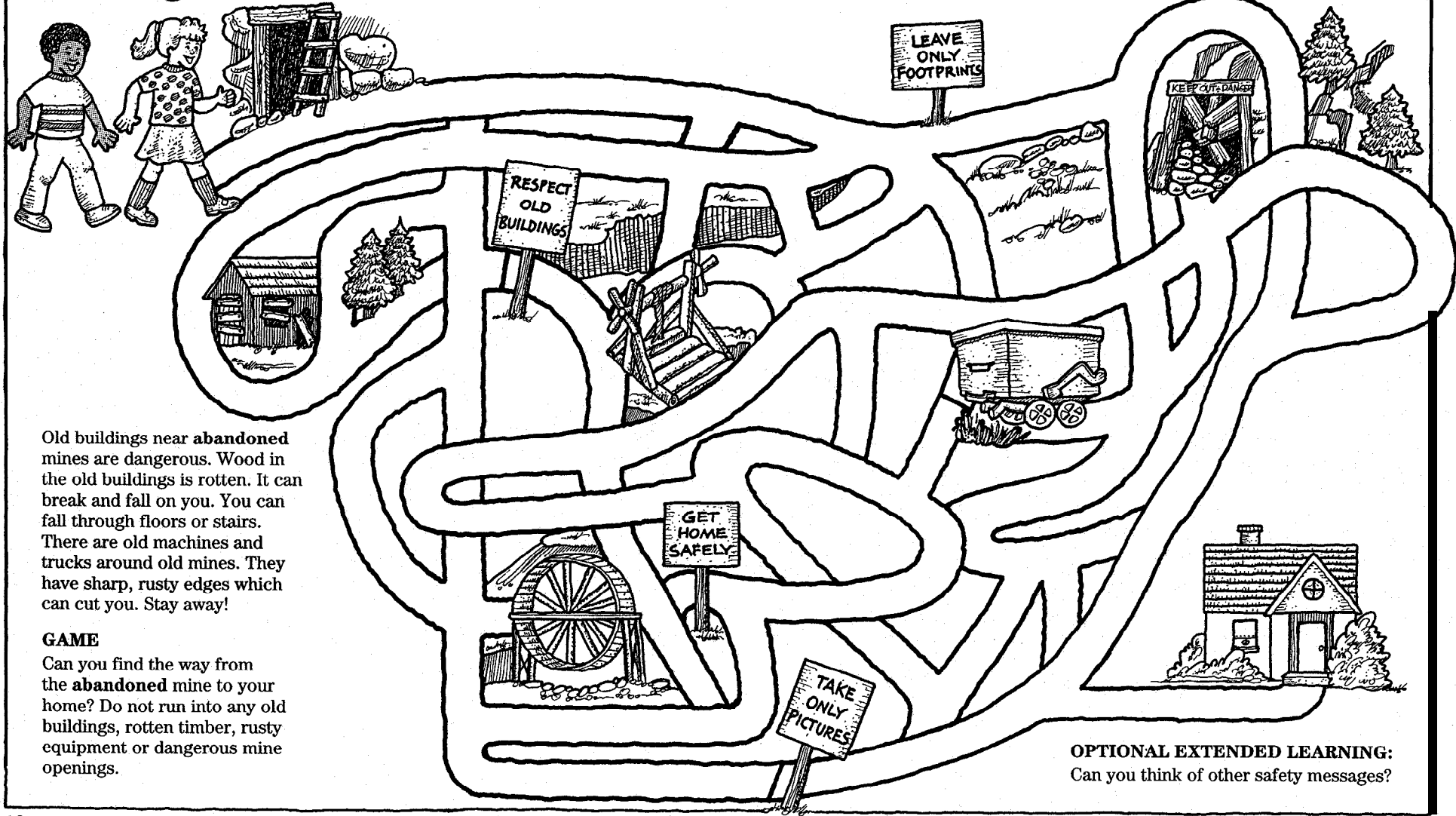
Charles A. Steen made a fortune when he discovered a rich uranium deposit near Moab. Uranium is used for nuclear energy. Steen named his uranium mine Mi Vida, which is Spanish for "My Life."

OPTIONAL EXTENDED LEARNING:

Tell which famous miner you most admire and why. Or draw a picture of this person.



Dangers lurk in old mines!



Old buildings near **abandoned** mines are dangerous. Wood in the old buildings is rotten. It can break and fall on you. You can fall through floors or stairs. There are old machines and trucks around old mines. They have sharp, rusty edges which can cut you. Stay away!

GAME

Can you find the way from the **abandoned** mine to your home? Do not run into any old buildings, rotten timber, rusty equipment or dangerous mine openings.

OPTIONAL EXTENDED LEARNING:
Can you think of other safety messages?



3.

UNIT 3. MINING

Look inside an underground mine.

GAME

Connect the dots to see a mine. The words are parts of an underground mine. Study them and learn what they mean.

Ore body

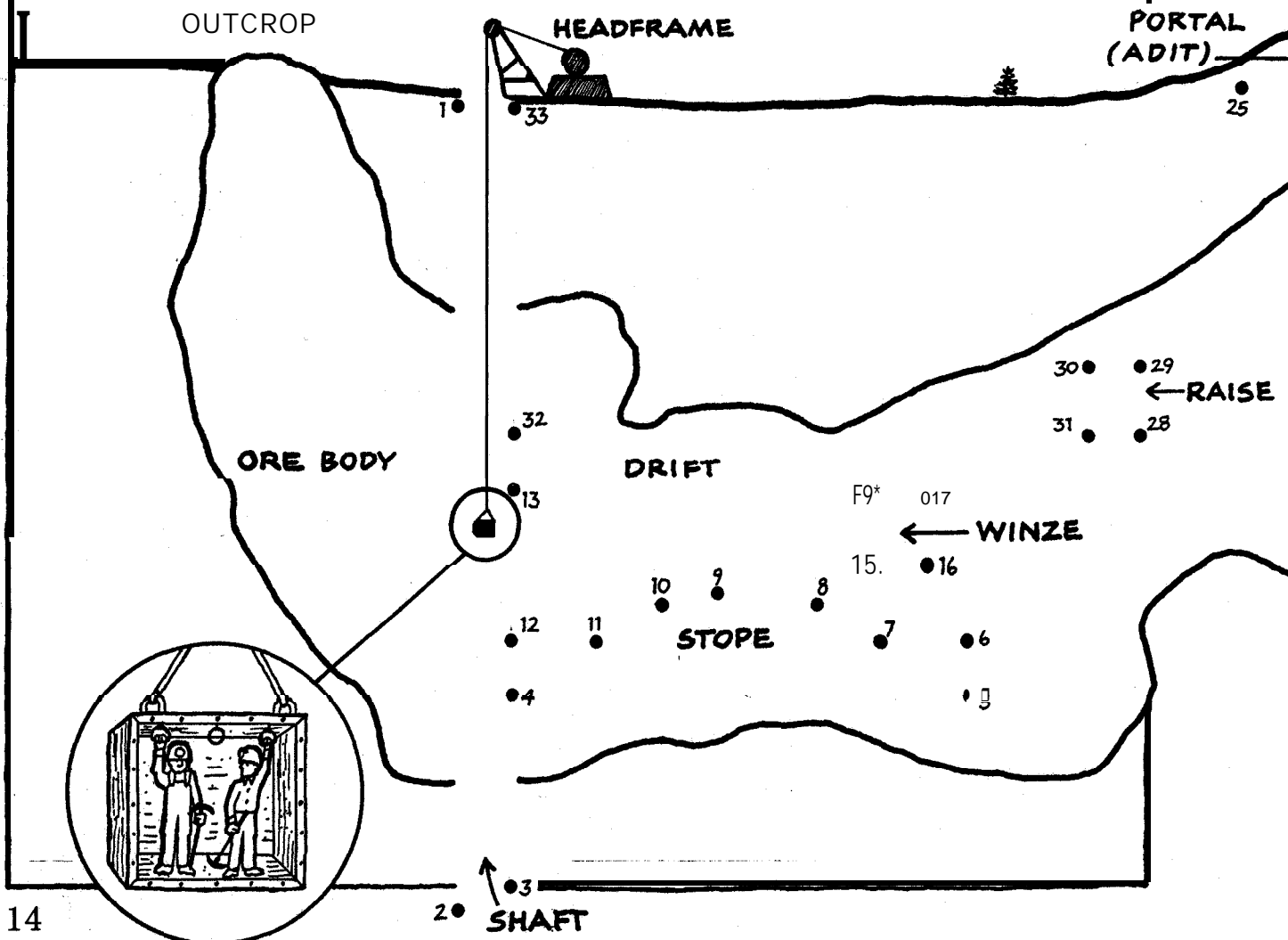
A part of the earth that has minerals in it. Color it gold or silver.

Ore

Minerals that can be mined and sold. Find the ore car and color the ore inside gold or silver.

Headframe

A headframe has an elevator used to move people, ore and tools in and out of the mine. Circle the headframe.



Portal or Adit

A horizontal entrance to a mine. Can you find it?
There is a picture of **an abandoned** adit on page six.

Shaft

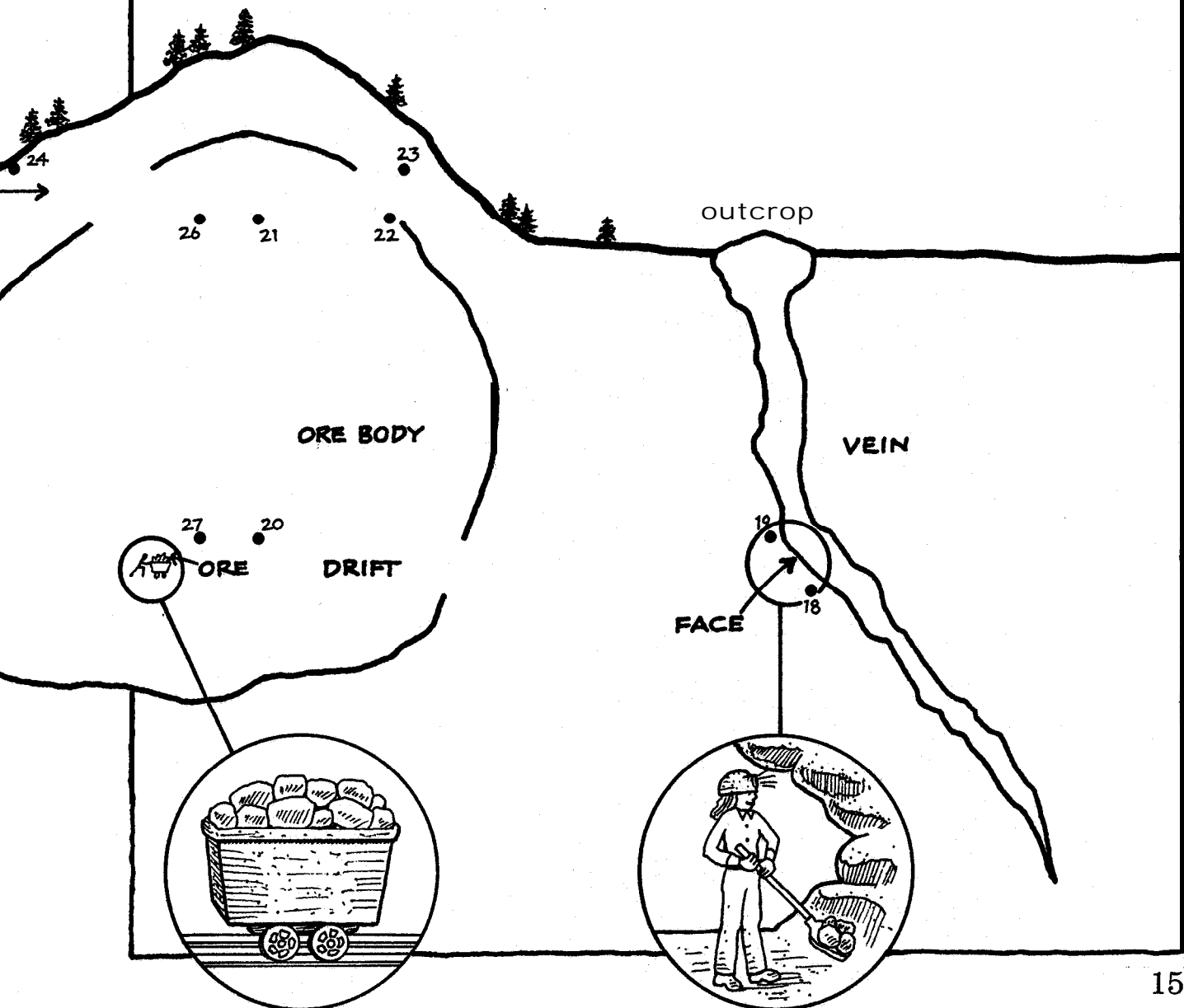
A vertical tunnel that goes from the ground down into a mine.

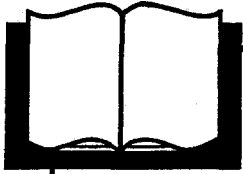
Face

The place where the ore body is broken and removed.

OPTIONAL EXTENDED LEARNING:

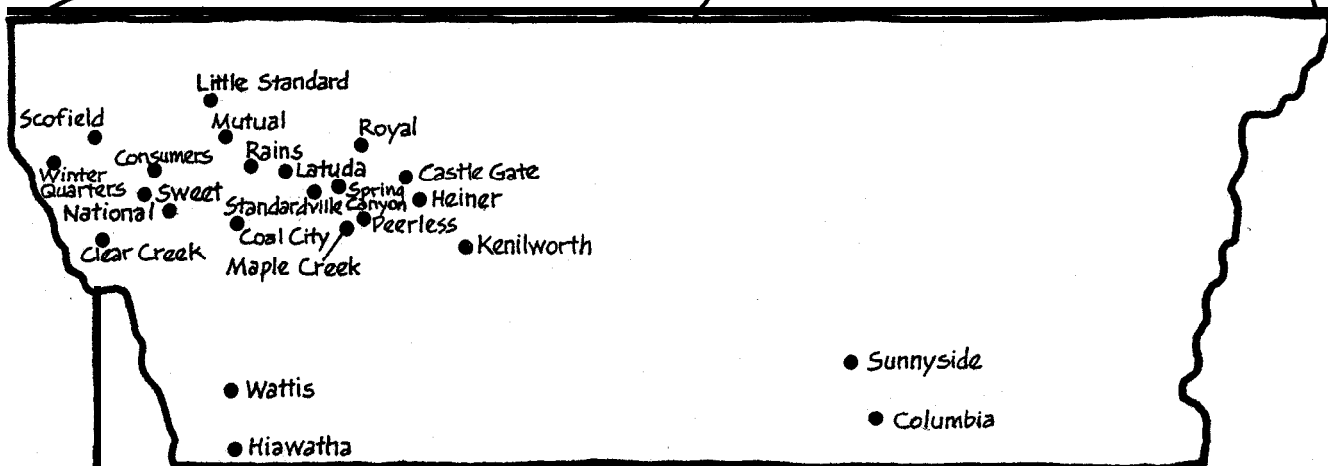
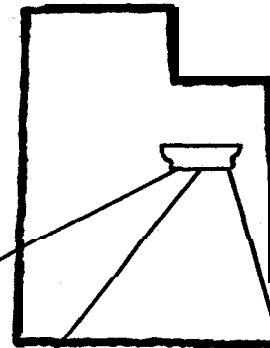
Do you know anyone who works at a mine? What is the person's job?





How did Carbon County get its name?

Once there were 23 coal mining camps in one of Utah's counties. Because carbon is another name for coal, the county was named Carbon County.






GAME


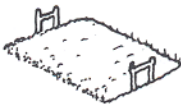
Can you find all the coal camps on the Carbon County map?



Solve the picture puzzles to make the coal camp names. Write the names next to the picture puzzles.

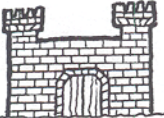
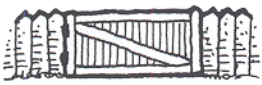
1.  +  = _____

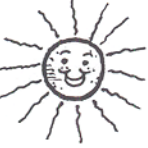



2.  +  + less = _____

3.  -  +  = _____

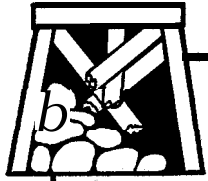
4.  - UT +  = _____

5.  +  + yon = _____

6.  +  = _____

7.  +  +  -  = _____

8.  +  + DA = _____



Old dynamite can blow UP!

Explosive materials are found near **abandoned** mines. Explosives can blow up and hurt you!

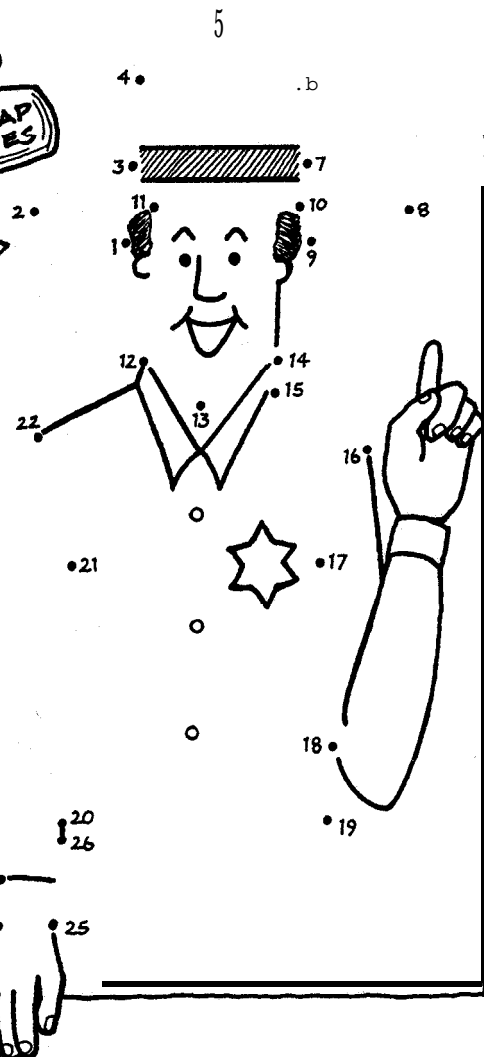
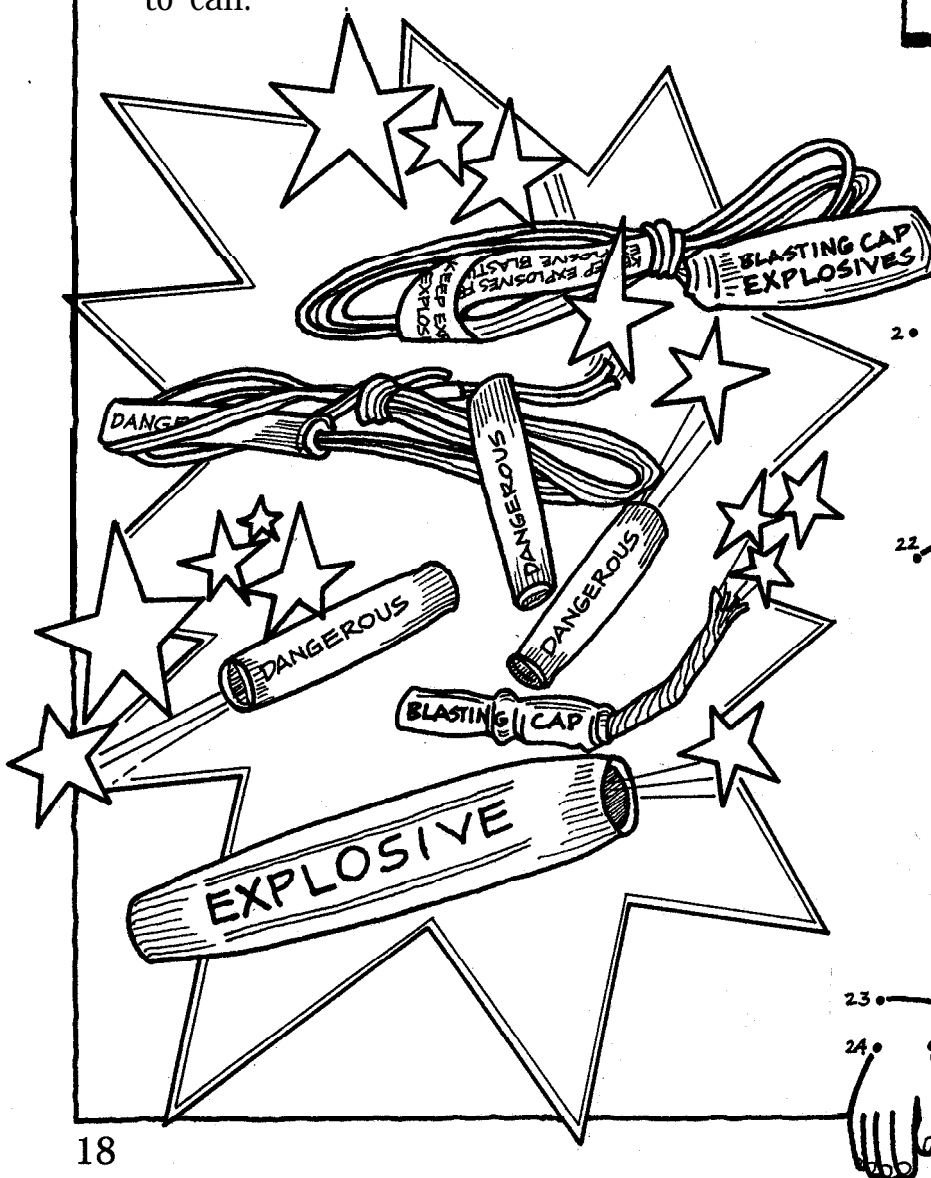
GAME

First, connect the dots. Then, unscramble the word to see whom to call.

If you find something that looks like these pictures,

**DON'T TOUCH IT!
CALL THE'**

S F R E H F I
[] [] [] R [] []

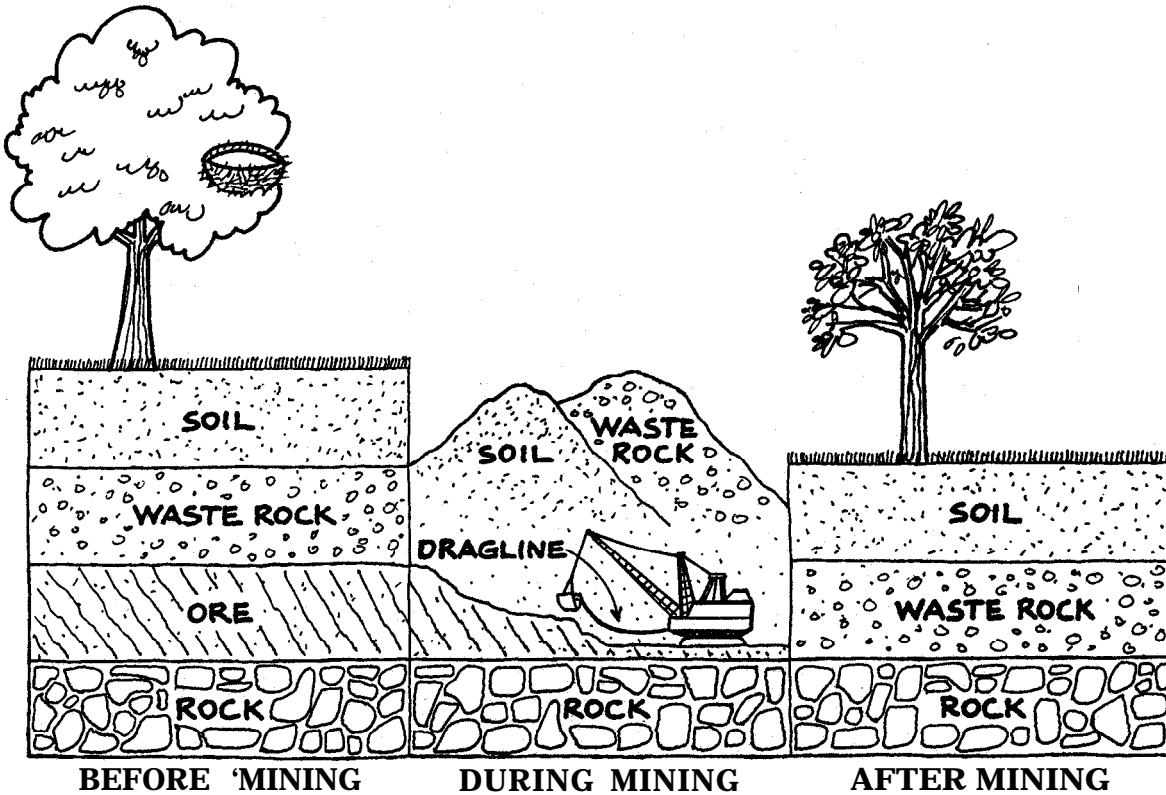




4.

UNIT 4. MINING

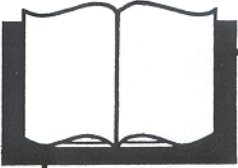
Surface mines are replanted.



GAME

Did you know that?

1. After mining, the soil is replaced and the land is replanted with grass and trees? **O Yes O No**. This is called **reclamation**. Color the replanted land green or draw flowers on the diagram.
2. Twenty-five people can fit into a dragline bucket? **O Yes O No**. Find it and draw a circle around it.
3. Mining companies hire wildlife experts to move eagle's nests out of the way of mining? **O Yes O No**. Find the eagle's nest and move it.
4. There are two large surface mines in the Oquirrh Mountains near Salt Lake City? **O Yes O No**. One is the largest open pit copper mine. The other mines enough gold in one week to make 32,500 gold rings.



Can you find Utah mining towns?

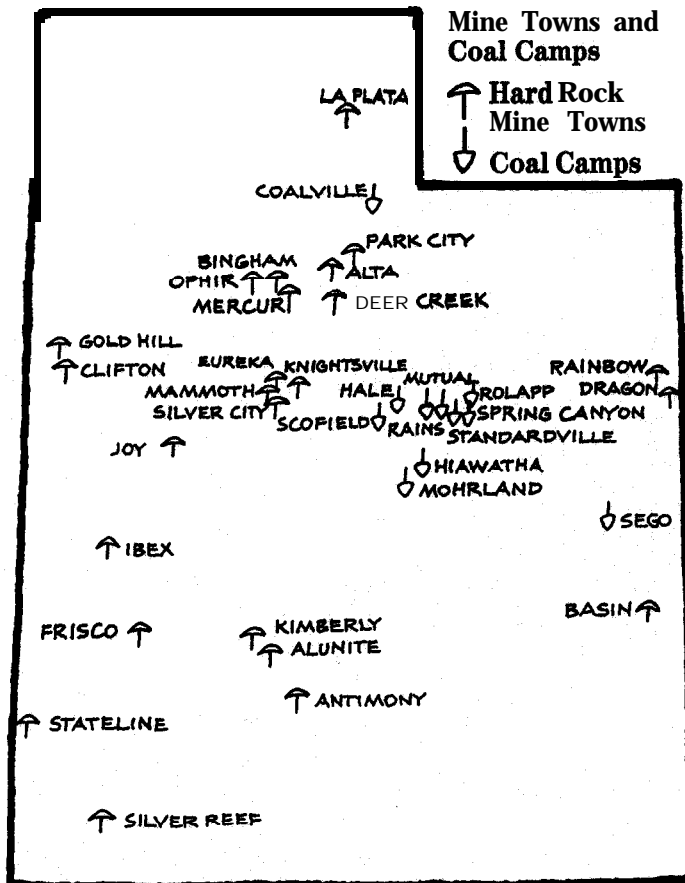
GAME 1

The names of 22 Utah mining towns are hidden in the letters below. They are written in different directions. Some are even backwards. Circle the letters that make a name. Two names are circled for you.

A	H	T	A	W	A	I	H	X	E	B	I	E
H	T	O	M	M	A	M	G	O	A	T	L	A
R	I	H	P	O	L	L	I	H	D	L	O	G
A	N	O	Y	N	A	C	G	N	I	R	P	S
R	O	L	A	P	P	P	E	V	A	L	E	F
D	C	A	D	R	A	Z	D	S	N	I	A	R
L	V	U	D	E	E	R	C	R	E	E	K	I
E	U	R	E	K	A	R	K	L	A	Y	I	S
I	E	N	D	D	O	T	A	C	Y	G	Z	C
F	B	W	N	M	I	H	T	S	I	T	O	O
O	B	A	S	I	N	E	N	D	E	T	T	N
C	T	M	U	T	U	A	L	P	L	G	Y	X
S	E	L	L	I	V	L	A	O	C	J	O	Y

GAME 2

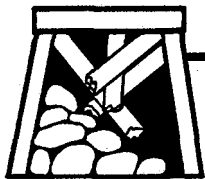
See the two different symbols by the town names on the map. Coal is a “soft” rock mineral and is shown by this symbol. ⬇ Gold and silver are “hard” rock minerals and are shown by this symbol. ⬆ Look on the map to find if the town is a coal camp or a hard rock mine town and draw the symbol next to the name.



1. _____ Alta
2. _____ Basin
3. _____ Coalville
4. _____ Deer Creek
5. _____ Dragon
6. _____ Eureka
7. _____ Frisco
8. _____ Gold Hill
9. - - - Hale
10. _____ Ibis
11. _____ Joy
12. _____ Hiawatha
13. _____ Mammoth
14. _____ Mutual
15. _____ ophir
16. _____ Park City
17. _____ Rains
18. _____ Rolapp
19. _____ Scofield
20. _____ Segoe
21. _____ Spring Canyon
22. _____ Standardville

OPTIONAL EXTENDED LEARNING:

Write a story or tell a classmate about living in a coal camp or hard rock mining town. Or draw a picture of what you think the town looked like.



Stay away from old mine shafts!

Some *abandoned* mines are big holes in the ground. They are called shafts. The holes can be very wide and very deep. Many holes are as wide as you are tall. Others are as wide as a road and as deep as buildings in a big city.

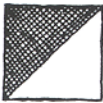
Sometimes people climb down in the holes to explore them. The people get caught in the holes and cannot get out. The holes are very dangerous.

Mine roofs and walls may cave in. The weight of the earth is always pressing down on the mine. There is no sure way of knowing when an old roof will fall.

When you go with your family and friends to the mountains, stay away from old mines.

GAME

Match each picture with the correct sentence.
Fill in the blank spaces.



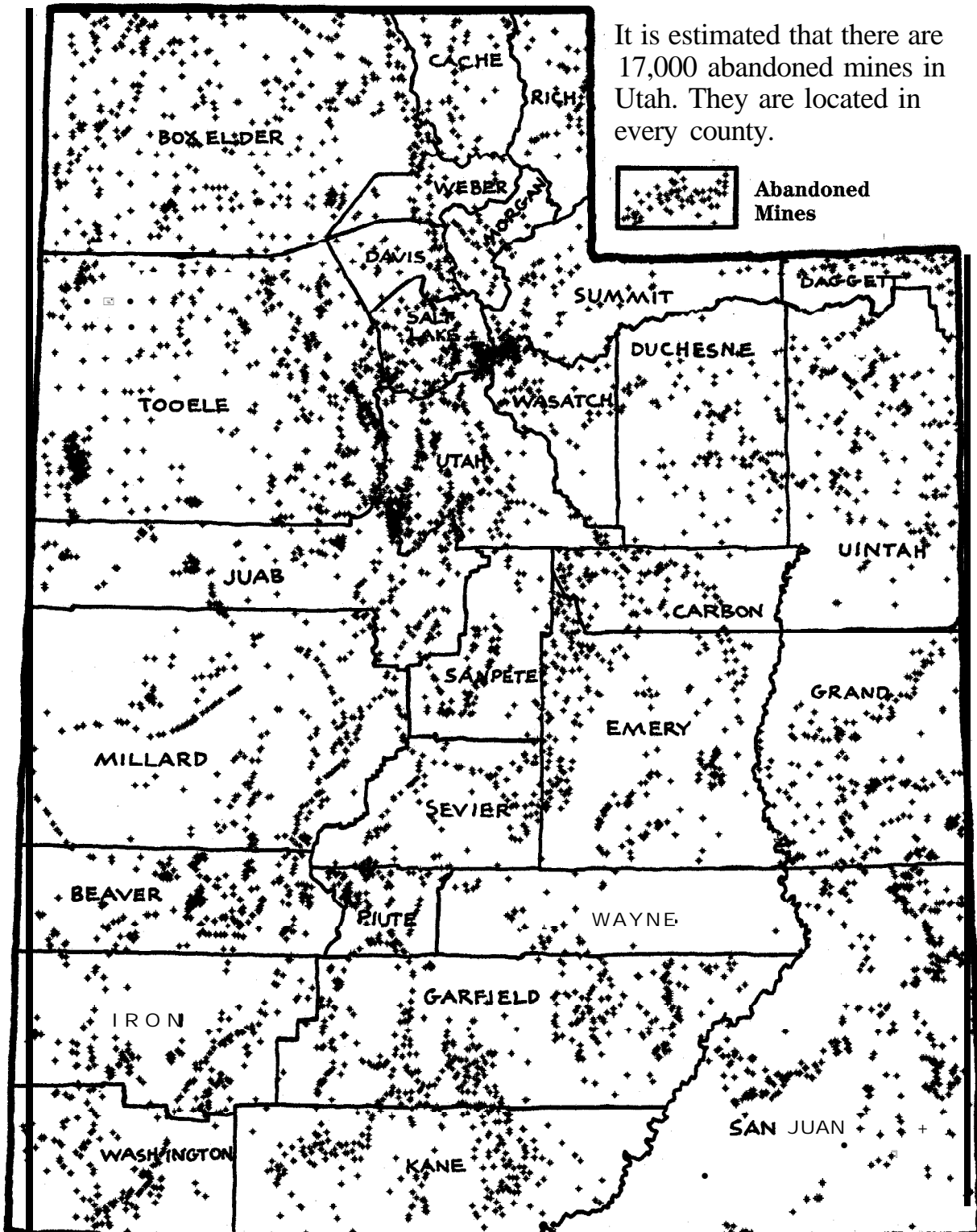
1. It is fun to hike and ski in the _____, but be sure you know there are no **abandoned** mines close by.
2. When you ride _____ in the snow with your family, be sure the area is safe.
3. A mining shaft is shown on a special map by this symbol _____.
4. _____ in the winter is fun and safe if you stay on groomed snow trails.
5. Stay on the trail when you are _____ or backpacking in mountains where there could be **abandoned** mines.
6. When you ride your _____ in the summer, be sure to wear a helmet and watch where you go.
7. Take only _____, leave only footprints.

OPTIONAL EXTENDED LEARNING:

Draw pictures or write about fun things you like to do outdoors. Tell or show how you do these things safely.

Where are Utah's abandoned mines?

It is estimated that there are 17,000 abandoned mines in Utah. They are located in every county.



If you want to learn more about mining in Utah, write a letter to this state agency:

Abandoned Mine Reclamation Program
Utah Division of Oil, Gas and Mining
Box 145801
Salt Lake City, UT 84114-5801
(801) 538-5340

This workbook has been designed to address and enhance standard 6040-03, objective 02 of the state core curriculum for the fourth grade level.

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